Case Study 5: Kenya Seed Fairs as a Drought Recovery Strategy in Kenya

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1 Introduction

Adaptation to climate change is a critical issue for Kenya. Agriculture supports 80 per cent of the population, directly or indirectly through farming, agro-based industries and firms (GoK 2002). In addition to its critical role in food security, agriculture is also the basis for economic growth and employment creation, as most industries and manufacturing firms are agro-based. As highlighted in Kenya's national communication under the United Nations Framework Convention on Climate Change (UNFCCC), likely impacts of climate change for Kenya include a decline in precipitation in the semi-arid areas, shortage of forage, increased incidences of waterborne diseases in humid areas, increased rates of depletion of biomass and poor nutrition (GoK 2002).

This case study focuses on seed fairs as a drought management strategy within the dryland areas of Kenya. The dryland areas of Kenya have experienced several droughts over the past decade and this is consistent with projections of future climate change. Kenya has had more than 15 serious droughts from 1950 to date. Due to this, numerous development and aid agencies have come in to help in the recovery process. Much of the help has been in form of food grain and seed aid that has been channelled to the communities through various approaches, seed fairs/shows being one of them. Farmers' ability to acquire and maintain seeds is important for continued agricultural production. Contrary to the assumption by many aid and development agencies that during drought there is seed shortage within affected communities, seed fairs show that communities may still have seeds, and that the problem sometimes has more to do with access than actual scarcity. Eastern Kenya was chosen because it is one of the regions most affected by drought, with 32 per cent of the money spent by government and donor agencies on seed distribution since 1992 being used in the province (Makokha *et al.* 2004). Seed fairs have been used here predominantly to channel assistance given in the form of seeds to help both in the recovery process and also to enhance resilience by building people's capacity to produce and store seeds for use locally. Studying how seed fairs have been used in drought recovery will shed light on how assistance given to communities during disasters can be used, not only to help them recover from a particular event, but also to strengthen their own coping strategies, institutions and economies that may prove valuable in the long run.

This case study demonstrates the importance of the use of holistic approaches by development, disaster relief agencies and governments in addressing needs of people affected by climate-related disasters.

2 Climate and Kenya

2.1 Key economic/political factors

Kenya is a developing country with a population of around 34 million of whom 80 per cent live in rural areas and depend directly or indirectly on agriculture for their livelihoods (GoK 2004, 2002). The total land mass area is 587,900 km^2 with a climate varying from tropical to arid in the interior. Agriculture is the mainstay of the economy, directly contributing 26 per cent of the gross domestic product (GDP) and 60 per cent of the export earnings (GoK 2004). Tourism is another foreign exchange earner contributing over 10 per cent of the GDP. Major

Table 1: Kenya Country Facts

Criteria	1994	1996	1998	2000	2001	2002
Population (millions)	27	28	28.7	30.5	31	31.5
Area (km^2)	582,650	582,650	582,650	582,650	582,650	582,650
Growth of GDP (%)	3.0	4.6	1.8	–0.2	1.2	1.2
Land area used for agricultural purposes (km^2)	52,047	52,047	52,047	52,047	52,047	52,047
Forest area (km^2)	20,310	20,310	20,310	17,096		
Population in absolute poverty (%)	46	48	52.3	56.78	56	
Population density/km^2			53	54	55	55
Rural populations as a percentage of total population	80	71	68	67	66	65
Structure of GDP (%)						
Agriculture	25	25	26	19.9		
Industry	13.6	13.8	16	18.7		
Services	58	59	60.2	61.3		
Human Development Index (HDI)	0.524 ('95)	0.512	0.511	0.510	0.539	0.550
Life expectancy at birth (years)	49	59	59.5	56.6	46.4	45
Mortality rate under 5 years old (per 1,000)				120	121	122
Adult literacy rate (%)	72.8	73.4	78	82	83	84.3
Total GHG emissions, CO_2 *per capita* (tonnes)	0.28 ('95)			0.3	0.31	0.23

cash crops grown include sugarcane (processed and consumed locally); coffee, tea and pyrethrum (mainly for export), while maize remains the major food crop. Over the last decade, agriculture has experienced low and declining productivity in terms of export earnings, employment creation, food security and household farm incomes, i.e. from a real growth of 4.4 per cent in 1996, to negative 2.4 per cent in 2000 and only registering a weak growth of 0.7 per cent in 2002 (GoK 2003).

In terms of Human Development Index (HDI), Kenya is ranked 148 out of 177 with a GDP *per capita* of US$9801020, life expectancy at birth of 45 years (UNDP 2004). The spread of HIV/AIDS represents a serious health problem that has reversed the significant gains made in life expectancy and infant mortality during the first three decades of independence. Over 50 per cent of the Kenyan population lives in absolute poverty (GoK 2003) (Table 1).

Some of the major climatic events in eastern Kenya include the droughts of 1991–2, 1992–3, 1995–6, 1998–2000 and 2004. These affected millions of people as they were characterised by massive loss of crops and livestock. In 1997–8, Kenya experienced El-Niño rains which affected almost the whole country. Widespread flooding destroyed infrastructure, crops and property. There was increased animal and plant diseases and around 1,000 lives were lost. An adverse drought followed thereafter from June 1998 due to the La-Niña effect. This was characterised by successive crop failure, shortage of pasture and water for livestock. The droughts extended to 2000 and led to power rationing due to the reduced water levels in the hydro-electric dams (IRI 2005). This impacted negatively on all sectors of the economy.

Though the need to take care of the environment is mentioned in several policy documents, climate change is rarely incorporated. Under the economic recovery strategy paper for 2003–7, the suggested solutions for agricultural sector focus were on improving performance of cash crop farming but not subsistence farming, despite the latter being an important source of livelihood for many people. The traditional export crops, including coffee and tea, have experienced declining world market prices for some time. Concerning response to disasters like droughts, it has been recommended that the government strengthens food distribution and its targeting mechanism (GoK 2003). But this case study shows it is more important if community-based institutions and livelihood strategies are strengthened to make them independent.

2.2 Key expected climate change impacts

Since more than two-thirds of Kenyans depend directly on land and natural resources for their livelihoods, the effects of climatic variability and change on land and natural resources are likely to have a significant influence on households' well-being and the economy at large. The drylands account for more than 80 per cent of Kenya's total land area and receive rainfall of 500–700 mm annually (CRS 2003). They are becoming increasingly important as the high population in high and medium potential areas force people to migrate to these marginal lands. Major threats to Kenya as a result of climate change identified in Kenya's initial national communication to UNFCCC include:

- Sea level rise that would inundate the coastal belt, settlements close to the beaches, river valleys and estuaries adversely affecting the tourist industry and resulting in multiplicity of socio-economic ramifications, e.g. increased poverty and unemployment
- Abnormal rains in humid areas that may destroy houses and other infrastructure
- Global warming that would make Arid and Semi-arid Lands (ASALs) drier, thereby affecting both plants and animals. Food production in these areas would most likely be adversely affected, leading to increased malnutrition
- Increased occurrence of extreme climatic events such as droughts, heavy and prolonged rains and floods
- Increased mean temperature.

The major threat to Kenya as a result of climate change may be the projected increase in frequency of drought, especially in the ASALs (Aklilu and Wekesa 2002; GoK 2002). The agriculture and economies of these areas may be severely affected.

Other initiatives in Kenya investigating climate change impacts include the UNEP (United Nations Environment Programme)/START (System for Analysis, Research and Training)/TWAS (Third World Academy of Sciences)/GEF (Global Environment Facility) Assessment of Impacts and Adaptation to Climate Change in Multiple Regions and Sectors project (AIACC 2002) in East Africa. This is a regional study aimed at improving the understanding of the relationship between climate change parameters (precipitation and temperature) and the incidences of malaria and cholera in Lake Victoria Basin of East Africa. It is part of a three-year project carrying out investigations in 46 developing countries and is funded by GEF, USAID (United States Agency for International Development), CIDA (Canadian International Development Agency), US-EPA (United States Environment Protection Agency) and the World Bank. Experience from this project will be used in implementing preferred adaptation strategies to strengthen local coping capacity and monitor performance.

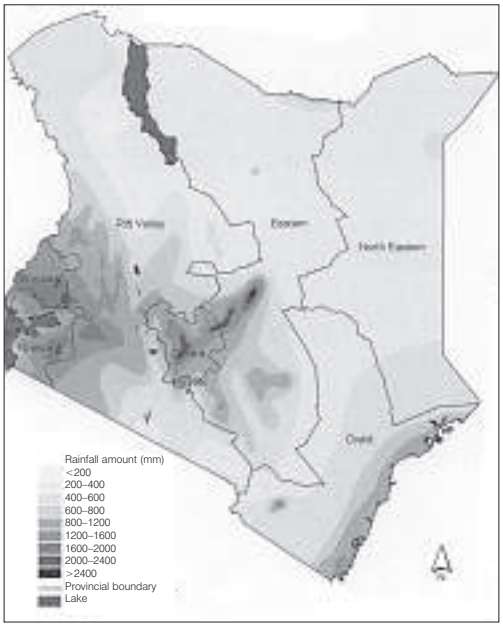
A second initiative is the International Research Institute (IRI) projects on 'Improvement of regional climate models, prediction and early warning in the Greater Horn of Africa' (GHA). The initiative aims at contributing to improved monitoring, prediction and applications of climate information for timely early warning of climate-related disasters in support of regional disaster preparedness and other sustainable development objectives in the GHA under the USAID/WMO (World Meteorological Organisation) supported IRI (International Research Institute at Columbia University)/ICPAC project. The IRI and IGAD (Intergovernmental Authority on Development) Climate Prediction and Application Center (ICPAC) have provided the framework for institutional capacity to apply climate information in mitigating impacts over the GHA. Enhanced collaborations between the two institutions has initiated a framework for building regional and national capacity in seasonal forecast operations, training and applications activities with key partners in transforming climate products in vulnerability analysis, food security and hydrological modelling and water resources assessments. An initiative coordinated by UNEP to integrate vulnerability and adaptation to climate change into development planning as a GEF pilot project to assist mainstreaming is in preparation.

2.3 Key institutional/policy processes where climate change is/should be taken into account

Kenya is a developing country and submitted its initial national communication to UNFCCC in 2002 showing its commitment to the convention on climate change. Funding for climate change enabling activities for the first national communication was received through GEF in 2000.

A number of policy documents address issues

Figure 1: Rainfall Distribution in Kenya



Source: GIS Unit at ICRAF.

that are climate relevant, such as drought and food security; however, explicit policies that target adaptation at the household or local community level are lacking. Because Kenya is not a Least Developed Country (LDC), it is not part of the National Adaptation Programme of Action (NAPA) process.

Policies on climate change in many sectors including water, agriculture and energy tend to focus on introducing new technologies (high- yielding crop varieties, dam construction, alternative energy sources) which may not only take time before implementing but are also capital- and technology-intensive and hence unlikely to be implemented in the short term. This is because of the limited financial resources at the disposal of the government.

The National Environmental Authority (NEMA) under the Ministry of Environment and Natural Resources is the government department coordinating climate change activities in Kenya. It works with other ministries and government departments including ministries of energy, health, agriculture and rural development, trade and industry, water and irrigation, finance, planning and national development. The Meteorological Department under the Ministry of Transport and Communication, however, remains the focal point for the Intergovernmental Panel on Climate Change (IPCC). Other departments, including the Central Bureau of Statistics, Kenya Institute of Public Policy Research and Analysis, Kenya Bureau of Standards, Kenya Power and Electricity Generating Company are lately getting involved in climate-related activities.

Other ministries like Housing, Roads and Public Works also need to become actively involved in climate change-related activities as projected changes could also have a significant impact on them.

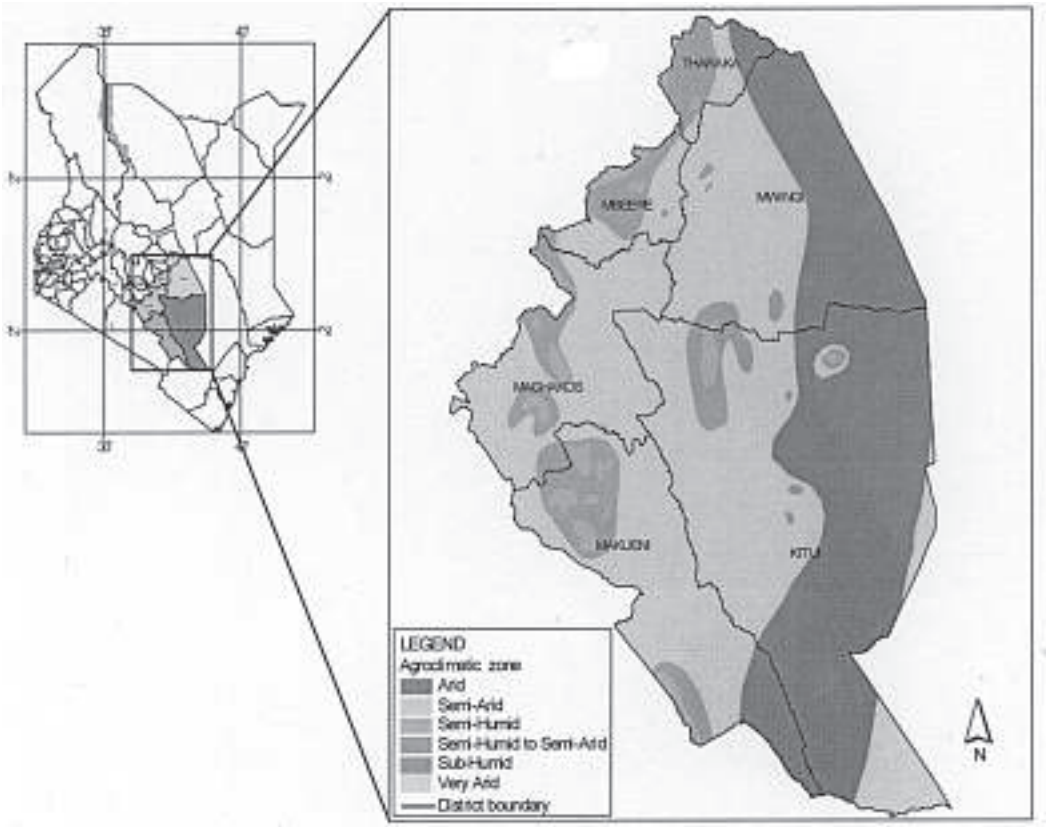
3 Seed fairs as drought recovery strategy in eastern Kenya

3.1 Introduction

The local communities in the drylands of the Eastern Province mainly practice agriculture together with livestock keeping. The majority are small-scale mixed farmers who produce mostly for consumption but also sell some of the produce as a source of income. Most districts in the Eastern Province lie in ASALs, receiving 500–700 mm of rain in two seasons: long rains (March–May) and short rains (October–December) (CRS 2003). The ASALs have the highest incidence of poverty (defined in terms of those living on less than US$1/day), averaging at about 65 per cent with very low access to basic social services (GoK 2003). The infrastructure *per capita* is very low compared with other parts of the country. The area frequently suffers low, erratic and poorly distributed rainfall (see Figure 1). Crop failures are frequent and alternative sources of income marginal, and recovery among impoverished households after drought is a large and possibly increasing problem. Even if normal rainfall resumes, some farmer–households have been finding it increasingly difficult to recover from drought due to lack of access to the right seeds at the right time. For some households, the lack of access to seeds could be due to lack of money to purchase them, while for others it is due to inadequate information as to the type and quantity of seeds available and the long distance to be covered to get them.

Both government and development partners consider strategies that incorporate both food and seed provision to be more appropriate than just giving food aid alone to households affected by climate-related disaster like drought. Assistance in

Figure 2: Map Showing Some of the Districts Affected by the 1998/2000 Drought



Source: GIS Unit at ICRAF.

the form of seeds for poor farming households helps them recover from disasters and may improve their resilience in the phase of climate change while food grains help in providing immediate relief. Seed aid given as relief after a disaster could have long-term effects on the agricultural systems (Table 2).

3.2 The adaptation to drought story

In the recent past, the Eastern Province of Kenya has suffered both drought and, to a lesser extent, floods. Prior to 1997, the districts recorded below average crop harvests in two successive seasons due to drought that depleted farmers' resource base. The 1998 short rains failed and the 1999 short and long rains were below average. In 1999 for example, crop production averaged 15–53 per cent of normal crop production in an average year (Omanga 2002).

The continuous drought between 1998 and 2000 led to poor harvests and associated food shortages in most parts of semi-arid eastern Kenya (CRS 2003), affecting not only food but also farm level seed availability among resource-poor farmers. During a baseline study in 1994 by the Intermediate Technology Development Group-East Africa (ITDG-EA) for example, farmers in Tharaka District, one of the affected areas, identified limited access to quality seeds at the right time as a major limitation to food production (ITDG-EA 2000). Severe drought realised in 2000 made the government declare the year a drought emergency and appealed to donor agencies to provide seed to 105,000 and 270,000 seed-needy households in 2000 and 2001, respectively (CRS 2003).

Both government and a number of non-governmental organisations (NGOs) used the conventional seed distribution approach whereby

Table 2: Characterisation of Some of the Districts in Eastern Kenya

District	Agro-ecological zones	Farming systems, major crops and livestock activities and chances of crop failures
Machakos, Mbeere, Makueni	Predominantly Zone 4 but Zone 5 is also found	Agro-pastoralists. Grow crops and keep livestock. Major crops include maize, beans, cowpea, pigeon pea, green grams and *dolichos*. Sorghum, millet, cassava and sweat potatoes. Crop failures in three out of five seasons
Kitui, Mwingi, Tharaka	Predominantly Zones 4 and 5 but Zone 6 is also found	Agro-pastoralists. Grow crops and keep livestock. Crops grown are millet, sorghum, cotton, cowpea, green grams and pigeon pea. Some farmers plant maize and beans. Crop failure in four out of five seasons

Source: Makokha et al. (2004).

seed is sourced from seed companies and distributed to needy households through the government or administrative structures (CRS 2003). Catholic Relief Services (CRS) and other partners (the local dioceses of Meru, Embu, Muranga, Machakos and Kitui) together with the Food and Agriculture Organization (FAO) used a novel approach of seed vouchers and fairs to distribute seed to over 35,000 households in seven districts, namely Machakos, Makueni, Kitui, Mwingi, Muranga, Mbeere and Tharaka. This Seed Voucher and Fair (SV&F) system adopted by CRS had been used in a number of countries to help in agricultural recovery from the last decade (Sperling 2001). Previously CRS had used the SV&F system in Karamoja region of Uganda and southern Sudan in 1999. Here, farmers were given the vouchers and had to look for seeds from whomever had them. Some received poor-quality seeds since there was no way of controlling the quality of seed being exchanged for the vouchers and monitoring how the whole exercise went.

From this bad experience, CRS felt that apart from giving needy households vouchers, they also needed to identify the source of seeds, hence the idea of the SV&F system that they have used in Kenya since 2000 (Paul Omanga, pers. comm.[1]). Apart from distributing seeds, seed shows as opposed to the conventional methods were also aimed at promoting drought-tolerant crop technologies and sharing of information. It was realised that around 90 per cent of farmers in dryland areas use local seeds; it is only a small percentage that rely on commercial seeds, hence the need to strengthen the local seed systems.

Provision of quality seeds is very important for long-term productivity of dryland areas. Under normal circumstances, farmers in such areas rely mainly on their own seed from previous harvests, local market grains, neighbours or local farm input stockists for their seed sources (CRS, ODI, ICRISAT 2002). But with frequent droughts, aid agencies have often misdiagnosed seed inaccessibility with seed unavailability. Resource-poor farmers are the worst affected and the majority of them do not access appropriate seeds due partly to inappropriate seed aid interventions, bureaucratic rigidities and non-viability of the formal seed sector in heterogeneous, diverse and marginal environments where these farmers operate (Mugah 2002). Quality of seeds is just one aspect of crop production; how and the conditions under which the crop is grown also matter.

Under the formal system of seed relief distribution, seeds are purchased and distributed using the existing government or institutional structures. Tenders are usually advertised for commercial seed companies who bid for them. After an evaluation, those awarded the contracts supply the *needed* seeds to the affected areas, where they are subsequently stored within local government or NGO offices and later distributed by the staff on the ground. This approach, which has been used most of the time that disasters strike has, however, undermined rather than enabled communities to recover as evidenced by the fact that such areas still find it difficult surviving drought even after the increased seed assistance. Under this approach, affected households or communities remain passive recipients of seeds as they do not participate in

Box 1: Genesis of CRS/Kenya Seed Fairs

In 2000, with the short rains approaching, CRS/Kenya with financial assistance from FAO carried out a successful seed fair in Embu and Meru Districts. It organised 14 seed fairs at which over 8,000 farm families were able to exchange vouchers for seed of their choice. In three weeks, CRS/Kenya and partners were able to identify target families, inform grain traders and organise seed fairs allowing farm families to get the seeds before the rains began. In contrast, many relief agencies that ordered seeds through commercial seed companies did not receive them in time for planting. Farmers acquired larger quantities through fairs, i.e. 14 kg of seed in exchange of $8 vouchers, which could have purchased only 4 kg of commercial seed. Based on the performance of the 14 seed fairs held in 2000, FAO asked CRS/Kenya to develop a follow-up project to strengthen seed systems and increase agricultural resilience in six districts in eastern Kenya using the same approach.

Source: CRS, ODI, ICRISAT (2002: 28)

procuring or selecting the type of seeds to be given. Due to their lack of participation, cereal grains distributed as part of food aid have ended up being planted as seed by the targeted marginalised communities and poor farmers (Omanga 2002). This often results in poor crop performance because such grains were not meant for planting. Also, because appropriate local seed varieties are not readily available with commercial seed companies, relief agencies often purchase and distribute seeds of improved varieties which are available with seed companies. Such seeds may be less adapted to such areas and less liked by farmers. In southern Sudan, the CRS, ODI, ICRISAT (2002) found that seed aid is usually brought from neighbouring countries, which beneficiaries are not familiar with. Moreover, such varieties have not performed well due to the differences in climatic and soil conditions, poor seed quality and beneficiaries' lack of knowledge of crop management practices for these varieties. Where ecological and/or socio-economic conditions are risky and diverse, farmers will also have diverse needs that can only be met with a range of crop types (McGuire 2001). This cannot be met by the more uniform seed types available with commercial seed dealers. But despite this inappropriate approach of channelling assistance, it is interesting to note that improved varieties have not yet found their way into the local markets where local cultivars still dominate (Omanga 2002). It may therefore seem inappropriate to continue distributing seeds of crops and variety that are not widely grown following drought periods.

The use of seed fairs was initiated to help address some of the weaknesses associated with the conventional method of seed aid distribution that have been going on for over a decade. Numerous relief and development organisations including the Intermediate Technology Development Group (ITDG), CRS and the German aid agency Deutsche Gesellschaft for Technische Zusammenarbeit (GTZ) have used seed shows or SV&Fs to distribute seeds to households. SV&Fs used by CRS is an emergency response tool while seed shows (also called Seed Diversity and Cultural Fairs) used by development groups like ITDG aim at showcasing what the community has and providing a market for such products. However, there are some similarities in that both aim at making dryland communities seed secure in light of the increasing occurrence of extreme climatic events. SV&F, which was largely an emergency response, is also moving beyond just providing relief to building capacities of local communities. The present study will focus on how SV&F was used by CRS and other collaborators in 2001 as part of the drought recovery and capacity-building process in the Eastern Province of Kenya.

Seed shows in general are one-day events organised to bring together farmers to display their best seeds and other produce grown on their farms (ITDG-EA 2000). It is usually accompanied by some prior arrangements including setting the date and venue of the show, identifying exhibitors and judges, identifying the seed-needy households in a participatory manner and issuing them with vouchers (as happened during this particular event). On the actual day, both individual farmers and seed companies exhibit what they have. Seed fairs are usually organised a few weeks before the onset of the rains to ensure that seeds are planted immediately (CRS, ODI, ICRISAT 2002). Box 1 gives a background on CRS/Kenya seed fairs.

Box 2: The 2001 Seed Fairs

Through the seed vouchers and fairs, CRS and its implementing partners together with FAO distributed seed to over 35,000 households in Machakos, Makueni, Kitui, Mwingi, Muranga, Mbeere and Tharaka.

Approaches involved:

Targeting location and beneficiaries where districts were chosen based on severity of food insecurity and occurrence of drought. In each district, specific divisions and locations were selected based on rainfall and crop performance during the short rains of 2000 and the long rains of 2001, and used data to predict seed availability.

Beneficiaries were identified by organising sub-village committees, which developed criteria for nominating the neediest households (which in most cases excluded households with other sources of income, with an employed family member, with seed or food grain or with more than five goats and sheep). Committee members are elected during public meetings called by local leaders (including councillors, chiefs and assistant chiefs, these being the lowest political and administrative offices). Other members include leaders/representatives of youth and women's groups, and community-based organisations working in the locations. Women's groups tend to be very active in food-related initiatives because of their roles as family food providers.

Seed distribution was done through the Seed Voucher and Fair (SV&F) system with those identified by the village communities as needy issued with vouchers of a predetermined value. Farmers and local traders with surplus grain to be sold as seed were sensitised to bring the surplus to selected seed fair sites. Voucher holders then exchanged them for seed of crops, varieties and amount of their choice, depending on the monetary value.

On completion of seed fairs, seed sellers redeemed the vouchers for cash.

Source: CRS (2003: 4).

In 2001, FAO, CRS, Kenya Ministry of Agriculture and Rural development extension staff, Catholic Church diocesan staff, with financial support from the DFID (UK), implemented an emergency seed distribution in eastern Kenya districts of Machakos, Makueni, Kitui, Mwingi, Tharaka, Mbeere and Murang'a (CRS 2003), the analysis of which will form the basis of this case study. This was after a continuous drought between 1998 and 2000 that led to poor harvest and related food shortages. Box 2 gives a summary of what took place during the seed shows.

Seed fairs as opposed to formal method of seed relief distribution enabled:

- farmers to display their seeds
- farmers to access seeds of crop and varieties that they need/their choice
- the process of targeting beneficiaries to be participatory
- strengthening of local economies through sale of seeds by local suppliers (farmers and grain/seed stockists).
- It also exposed farmers to new crop germplasm from research organisations, which they would plant in the following season.
- It enabled an exchange and sharing of information and experiences on farming under changing local conditions. Community-based seed intervention strengthened the community-based institutions including community seed systems, which was not the case with conventional seed aid. It strengthens and stimulates linkages and information sharing among farmers.
- It enabled the distribution to be carried out in a short time.

The SV&F system is fast and cheap and hence ensures that help reaches the intended beneficiaries in time during such difficult periods; this being an important attribute in emergency recovery. Proper organisation and wider publicity is needed to ensure that as many people as possible are reached. On the actual day, thousands of tonnes of seeds are

Table 3: Comparison of Cost of Seed Distribution per Household Under Direct Seed Distribution (DSD) and Seed Voucher and Fair (SV&F) Systems in Some of the Affected Areas

Item	Unit	Method	
		DSD	SV&F
Number of beneficiary households	No	6,217	8,027
Cost of seed acquisition	US$	65,262	42,103
Cost of seed facilitation	US$	12,108	23,871
Cost of seed transportation	US$	8,530	0
Total	US$	85,900	65,974
Cost of seed package per beneficiary household	US$	10.5	5.2
Average price of seed	US$/kg	0.9	0.5
Total cost per beneficiary household	US$	13.8	8.2

Source: Makokha et al. (2004).

exchanged. In this case, farmers, traders and companies brought 2,500 tonnes of grains that were certified, and sold over 870 tonnes to over 30,000 households (CRS 2003). This is in comparison with the conventional system, where it could have taken a longer time, with the possibility of a lower number of households being reached using the same resources. In the past, non-targeted emergency seed aid resulted in relatively small quantities of seed per person (Sperling 2002).

According to Weltzien and vom Brocke (2001), there is need for healthy and viable seeds of preferred varieties to be accessible to farmers at the right time if they are to use their land and labour resources optimally. The significance of the time factor is illustrated in Choluteca, Honduras, which was affected by hurricane Mitch in 1998. Assistance in the form of bean seeds was given in June despite the fact that they are usually planted in May (Haugen 2001). The fact that the seed arrived late meant that farmers who had lost all their harvest and were not able to access seeds in other ways could not cultivate beans in the first cropping season after the hurricane, thereby hindering the recovery process.

The SV&F system was also found to be less bureaucratic and more cost effective than under the direct seed distribution (DSD) system. The need and cost of transport was significantly reduced as each party had to make his/her own private arrangement. After identifying local farmers or traders with seeds, they are sensitised and informed in advance of the date and venue of the fair. All participants (whether bringing seeds or coming for the seeds) make their own arrangements on how to reach the market. This is possible because the majority of the players (local traders, individual farmers) are based within the affected area. The need to establish stores was also significantly reduced. As Otadoh and Ingosi (2002) noted, where the government was involved, seeds arrived late in some areas due to the large quantity of seeds and many districts involved, leading to late planting and low yields being realised. Sometimes unsuitable varieties were delivered in some Agro-ecological Zones (AEZ) and non-preferred seeds in others.

In spite of the higher facilitation fee, the cost of providing seeds per household under the DSD system was still higher. The facilitation fee goes towards organising the seed fairs and includes such important elements as identifying deserving households and those with seeds and sensitisation of all participants. The average price of seed and cost of seed package per beneficiary household was found to be higher under the DSD system compared with the SV&F.

A review on emergency seed aid in Kenya (Embu, Machakos, Baringo and Makueni Districts) by Sperling (2002, 2001) showed that seed aid (procurement and delivery) is more effective when decentralised because the choice of crops and varieties can be better adapted to local conditions, targeting is more accurate because of the smaller scale, and holds the possibility of using many approaches (e.g. where in addition to seeds, skill building is necessary). By eliminating the need for the elaborate tendering procedure, transport and

storage, the SV&F system has been found to be cheaper than the DSD systems. In addition, the certified seeds from commercial dealers have been found in many places to be approximately six times more expensive than the local grain that dominates seeds exchanged through the SV&F system (Makokha *et al.* 2004).

The SV&F system ensures that much of the assistance remains within the area and is used to develop local capacity and institutions. It is estimated that more than 60 per cent of the money spent in the SV&F always remains within the affected local communities. In 2001 for example, US$193,200 of the US$276,000 spent on vouchers in six districts remained within the local communities (Makokha *et al.* 2004), representing 70 per cent of the total expenditure. The SV&F system provides an opportunity for local people to sell what they have. The small local traders, for example, usually buy from households during harvest time and sell back to farmers during planting time. It provides farmers with local seeds that have been improved over time through planting, with a ready market. Such seeds are more suited to the specific locations compared with seeds from commercial companies. As Pottier (1996) found out in postwar Rwanda, household food insecurity may not be confined to the loss of seeds and tools but also the possibly long-term disruptions to familiar seed supply channels and livelihood strategies, hence the importance of using local institutions in the recovery process.

The conventional system largely deals with commercial companies that are often located far out of the marginal areas and often supplies hybrid seeds that *they have* but not what the affected communities *need*. Commercial seeds remain too expensive for the majority of poor farm households (Sperling 2001), in addition to the fact that commercial seed suppliers offer very few varieties of drought-tolerant crops. Local seed systems are strong because they are diverse, with a range of crops and multiple varieties of each crop; hence any seed relief intervention needs to take this into account.

One of the strategies identified in the initial national communication to the UNFCCC to strengthen the agricultural sector is the development of drought-resistant varieties for use in dry areas (GoK 2002). Even though seeds may be developed at research centres and available through commercial dealers or a few farmers, lack of information may not allow households to access them. Restructuring of the government in the late 1990s de-employed most of the lower cadre staff, including the extension staff that used to relay information to farmers. Seed shows therefore offer a good opportunity for disseminating such information and bringing it to the attention of many farmers. ITDG-EA (2000) found that village/ward-level seed shows held within the boundaries of a community defined by similar weather conditions, culture and biophysical conditions provide farmers with better opportunities to acquire useful crop varieties and related information. Through community seed shows, small-scale farmers strengthen their informal seed supply systems and gain greater control over their food production resources (ITDG-EA 2000), while at the same time they have the opportunity to interact with experts from research institutions to learn more about new food production techniques and the performance of improved crop varieties.

Seed fairs provide an opportunity for sharing farming experiences and are therefore considered an important building block for the community as members exchange knowledge and experiences on the crops they grow. It also provides an opportunity for the government agricultural teams at district and other lower levels to discuss with farmers issues to do with drought management, soil conservation and related activities. During seed fairs, agricultural officers and other leaders are usually given the first opportunity to address participants and share with them whatever they have at the beginning of the fair. As the fair progresses, farmers get the opportunity to view the different seeds available and ask those selling seeds about the source, performance and other questions that may be of interest. Through this consultation process, farmers are able to choose the best seeds. Members also learn to consult better and in the process increase their capacity for collective action. Since the majority of those displaying seeds for sale are fellow farmers, those buying are able to rate the quality of seed based on what they have observed in their neighbourhood.

From the seed diversity and cultural fairs that have largely been promoted by the development organisations, farmers have formed self-help groups that engage in other activities including seed bulking (ITDG-EA 2000). Here, farmers may come together and form a group to produce seeds from local crops

and varieties, package them and then later sell them locally. From the experience gained in managing seed shows, they can carry out seed production and sales within their communities well.

The seed fairs have also been used to encourage farmers to maintain crop diversity on their farms. This may contribute to more sustainable crop production as diversity has been the hallmark of dryland farming systems. Most farming communities in Kenya are rapidly losing their traditional food crops partly due to replacement by a narrower choice of improved crop varieties and crop types (ITDG-EA 2000) but also due to changing food tastes. Loss of crop diversity seriously increases vulnerability of such systems to extreme climate events, crop pests and diseases. In eastern Kenya, varieties of sorghum and millet, among others, safeguard against complete crop failure due to their drought-tolerant nature. Through seed shows, traditional crops such as these that were being forgotten are getting renewed interest and attention from participants, including outsiders (ITDG-EA 2000). Showing communities new recipes for preparing different foods has renewed interest in some crops which were being forgotten. In Tharaka for example, participants at seed fairs were shown that it is possible to prepare cakes from mixed wheat and millet flour (Eric Kisiangani pers. comm.[2]). This has renewed interest in millet which performs better in the dry areas but was being forgotten due to changing food preferences. A report by ITDG-Kenya (1999) showed that some of the reasons why farmers attend seed shows include getting exposure on different crop varieties growing in the area, finding out the sources of various seeds within their locations[3] and learning from other farmers issues related to seed preservation. The availability of local seeds during fairs enables the farmers to purchase local varieties, including wild land races and improved seeds, that have passed through generations and cycles of planting, contributing to the overall conservation of genetic diversity (Omanga 2002).

The fact that the SV&F strategy encourages reliance on "own" seed resources and on traditional coping mechanisms to maintain seed supply means that they are found to be favourable for maintenance of biodiversity (Bramel 2004). Because commercial seed companies specialise in the type and number of seeds they produce to benefit from economies of scale, continued reliance on them for seed supply and subsequent adoption at farm level may lead to decreased biodiversity. Bramel (2004) found that SV&F improves agro-diversity through strengthening the local seed system and exchange of local varieties as traders, community seed producers and companies with more varieties across and within ecological zones participate in the fairs. Traditional community seed producers should be encouraged to participate more in the fairs as a way of strengthening indigenous seed production and storage.

The use of hybrid seeds (the type that is abundantly available via commercial dealers and associated with the DSD system) by households which are repeatedly affected by drought is inappropriate, since most of them do not commonly obtain their seeds from stockists and therefore miss out on the information necessary to nurture such seed varieties (Sperling 2002, 2001). In addition, hybrids have traditionally been designed for optimal conditions which are lacking in the farmers' fields. The fact that they lose vigour with time (Remington 2004) means those farmers have to keep on buying seeds. Seed fairs aim at delivering more locally adapted varieties, ensuring that even the poor farmers get new materials, improving quality of farmers' seeds and helping farmers earn money from seed production (Sperling 2001). With local seeds, farmers know from their experience how to grow them. But with hybrid seeds, unless they have the relevant information, they may not achieve the optimum yields from their investment.

3.3 The outcome

Despite having three successive crop failures, seed supply through the seed fairs was adequate in 2001 indicating that local seed systems are resilient, and that local farmers and markets can supply the required seeds (Omanga 2002). The fact that local sources could provide enough seeds after such a long and continuous drought season means that seed aid in response to increased climate-related disasters should focus first on local resources.

Poor households without money can access seeds from other community members. Seed fairs have ensured that poor households can also access seeds through credit/loans, or paying in kind in terms of labour or exchanging the seeds they have with those they need. Work by Weltzien and vom Brocke in 2001 in the Soudanian zone of Mali found that farmers rely on traditional networks to access the seeds that they lack and the same quantity of grain

is returned back to the person who gave the grain for sowing after harvesting. Through such options, poor farmers without seeds and with limited resources can acquire seeds through loans, as payment for labour, as a small gift, or through sharecropping contracts on the land (Haugen 2001). Since it does not necessarily involve money, it may assist in areas lacking a functional monetary system, perhaps in areas affected by social disasters such as conflicts/war.

The participatory nature of seed fairs ensured that the very needy were reached: affected communities identified committees that later identified the very needy among them. Apart from the local administrators (chiefs, assistant chiefs) and elected leaders (e.g. councillors), other groups including youth and women's groups, civil society and religious organisations usually nominate their leaders or elect other members whom they think can represent them well in such committees. This ensured that resources reached the most deserving cases, with committee members making a list of such cases. This list is later read out aloud in a public meeting, where names of households with adequate resources are removed from the list. Through this process, only the really deserving cases remain in the list and qualify for assistance.

The seeds are inexpensive, easily accessible and timely. The fact that local seeds distributed through the SV&F system were six times cheaper ensured that affected households were given a higher quantity of seeds compared with the DSD method from the same amount. A study by Makokha *et al.* (2004) found that households participating in SV&F receive on average 17.5 kg over and above what the farmers benefiting from emergency seed through DSD. The fact that most of the funds remained within the affected areas ensured that much of the assistance actually remains where it is supposed to help and went a long way in strengthening local economy and production systems.

Seed fairs provided farmers with the flexibility to choose the crops and varieties according to their preference and suitability of crops. Because many individual farmers, local traders and even interested commercial seed companies come to the fairs, those in need of seeds are assured of a variety of seed supply. Relying on commercial seed companies could mean that large quantities of very few crop types and limited varieties are brought to the fairs. There is renewed interest in local varieties as interested households can now get such seeds at the seed fairs. Some people now grow many varieties of millet and sorghum and keep the seeds to sell or exchange at seed shows (ITDG-EA 2000). Those keen on seed production (e.g. traditional experts) now have a number of incentives to carry out such activities. This approach has strengthened the traditional system of seed management. In Tharaka District for example, farmers are now organising their own seed fairs and inviting development organisations such as ITDG-EA, which helped them come up with the idea, even in the absence of drought (Eric Kisiangani pers. comm. 2004). The government of Kenya, through the Office of the President, which handles emergencies, gave CRS Ksh5 million this year to conduct seed fairs in a number of districts in the dryland areas (Paul Omanga pers. comm.). This may be considered recognition of their good work in the affected areas. Other groups have taken up seed production and bulking and selling during the fairs as an additional income-generating activity.

Commercial seed companies, procurement and transport agencies lost business since seed fairs benefit mostly farmers and the local seed traders. But this is largely because they do not have some of the local varieties that dryland farmers may prefer. In addition, they are located in urban centres away from farmers and hence there is no incentive for people to cover longer distances if desired seeds are available nearby. In an attempt to make the approach more inclusive, both relief and development organisations involved in seed fairs have often invited the commercial seed companies and those with good seeds to sell alongside farmers and small-scale traders. It is worth noting that the budget for seed emergency in the current year (July 2004–June 2005) is around Ksh600 million. Those supporting seed fairs as a way of empowering communities feel that this can be reduced to around Ksh50 million (Paul Omanga pers. comm.).

Interaction between researchers and farmers has also improved as they get the opportunity to ask questions and to explain any new developments during such shows. In this way, developments in research can be easily accessed by farming households, thereby strengthening the systems currently being used. The SF&V system is a cost-effective way of providing information to farmers. It has given opportunity to the relevant government departments such as the Kenya Agricultural

Research Institute (KARI) seed department and Kenya Plant Health Inspectorate Services (KEPHIS) to educate farmers on seed propagation, treatment and storage. They are able to reach as many farmers as possible with minimum cost.

The SF&V system is now being used in many areas to provide emergency seed relief in response to both climate-related (drought, flood) and social (war or civil conflict) disasters, for example in Uganda and Sudan, because it does not create a dependency syndrome among recipients. Other agencies including ICRISAT and ODI have been keen on promoting this in these countries. It has also been adopted in parts of western Kenya which are not dry (e.g. in Yala) as a way of improving seed security and providing employment opportunity through seed bulking (Makokha *et al.* 2004).

4 Lessons learnt

'To strengthen dryland agricultural systems, we must not focus on problems but on internal strengths and external opportunities' (CRS, ODI, ICRISAT 2002).

4.1 Communities

Active involvement and participation by government line ministries and farmers from the start ensured success, since it created a strong sense of ownership of the event by all stakeholders as well as facilitating field follow-up activity. The government departments involved include the Ministry of Agriculture and Rural Development and the Office of the President (which is in charge of disasters and relief operations). Farmers prefer local grains as opposed to certified commercial seeds as experience from some of the fairs show. Apart from being cheaper than commercial seeds, farmers prefer local seeds because:

- Farmers trust local grains they can see (not packaged materials). They also trust grain that traders purchased from them at harvest time
- Farmers trust grains from their neighbours' crops, i.e. crops they have seen growing in the field and admired
- Farmers save crop varieties which have the most desirable qualities, such as good taste, easy to thresh, disease or pest resistant and drought tolerant
- Some farmers have had bad experiences with seed distribution where they were given seeds that are not suitable for the area and never performed well (Omanga 2004).

The renewed interest in some of the traditional drought-resistant crops is a result of the realisation that droughts are likely to be common in the future. Such information is conveyed to farmers during seed fairs by the relevant government departments and NGOs.

The diversity of crops has acted as a form of insurance against total crop failure in the case of extreme climatic events like drought. There is a need to expand the range of options for livelihoods in order to ameliorate the impacts of adverse weather/climate conditions that are becoming more frequent and likely to intensify with climate change.

If all stakeholders participate, the number of beneficiary households can be established fairly accurately and conflict minimised as the initiative is seen to be open, fair and acceptable. Those in need should always take charge to get the maximum benefit from any initiative geared towards assisting them.

Some of the traditional coping strategies may become inadequate with time due to rapid socio-economic changes and climate change. With severe and more common droughts expected with climate change, households may not only lose seeds but also other assets (such as animals) that could be used to secure seeds, either through providing labour to other people or selling them to get cash for purchasing seeds. Farming communities may need input from other sectors including scientific and development communities to ensure that they have more accurate information on what the future looks like, to make the best investment decisions (e.g. when to plant) in order to reduce their vulnerability to climate-related disasters.

Trust and mutual cooperation are necessary for sharing knowledge and experiences for the proper functioning of both local support systems and wider social networks.

4.2 Regional and national policy makers

The desire by development partners to assist households affected by drought can undermine local institutions and interfere with the coping mechanisms and livelihoods of the people in a community if they are not well informed and may result in permanent food insecurity and seed dependency.

Substituting traditional seed systems with formal

systems may be harmful. Haugen (2001) reported that large-scale use of uniform germplasm can make the cropping sector vulnerable to large-scale failures. Indiscriminate introduction of modern cropping systems could lead to the loss of ability to adapt to changing environmental conditions. If well planned, a seed show can facilitate the recovery of threatened local crop varieties that currently may be grown by only a few farmers.

Direct or formal methods of seed distribution involve mostly the large and established commercial companies. Agencies involved in DSD often disregard existing local seed systems and bring in seed from external sources, which often turn out to be inappropriate and unsuitable to the local agro-ecological conditions. Even if DSD brings new varieties developed by research institutes, there is no direct interaction between researchers, seed distributors and farmers. They thus destroy existing seed procurement mechanisms and create a dependence syndrome. Seed shows were introduced as a way of addressing these problems through building capacities of local communities in producing and disseminating seeds among members of their communities using their own mechanisms. Dissemination of relevant information to the intended users remains important in promoting sustainable agricultural development.

Blanket distribution of aid (e.g. seeds) should be avoided during emergencies: instead the needy should be identified and a market created for local resources. (Do not assume that everybody is affected equally by disasters.) By giving vouchers to the needy and creating a market for those with seeds, not only is the recovery process helped but it also strengthens local economies and production systems. Targeting beneficiaries ensures that the neediest are given priority and are adequately assisted, impacts are maximised, costs are reduced and dependency is minimised. In this way, the limited resources available during emergencies/disasters are used efficiently.

Local level coping strategies are cheap and easily adapt to changing circumstances. Targeting local communities and households' capability, such as traditional seed production, storage and distribution is a potentially powerful adaptation tool. Such strategies address both climate-related disasters and poverty eradication. Strengthening long-term adaptive capacity may involve strengthening current coping strategies.

4.3 Financial and administrative procedures

Seed shows reduce costs of seed distribution in terms of transport, storage and delays incurred during the tendering process. By using local resources and institutions, the most deserving cases can be reached with limited effort and resources and more quickly. Involving the affected communities from the start ensures that the process is not only transparent but acceptable. Use of local resources and institutions is also an important element of capacity building.

Coordination with other agencies is important to avoid duplication of efforts and wastage of limited resources. Other organisations could be planning or have already conducted an intervention in the same community. You may end up providing what people in such difficult circumstances have already been assisted with, or do not really need.

4.4 Recommendations and future climate research needs

Since there are losers (e.g. seed companies) and beneficiaries, it is important that a further and thorough evaluation of seed fairs is carried out to see determine the net effect. It would be interesting to know whether people are usually adequately sensitised and their views taken into consideration when carrying out disaster relief operations now that they are likely to become more frequent with climate change. It is also important to follow up and see how they evaluate the performance both in affected areas and others not necessarily affected by drought.

There may be a need to look at the issue of how quality control may be achieved in such initiatives involving many people and carried out within such a short time so that this informs long-term adaptation to extreme climatic conditions.

The positive role of seed fairs in conserving crop diversity also needs to be evaluated further. In addition, more work is needed to determine how information sharing among affected or vulnerable communities may be strengthened. Additional effort should be put in documenting indigenous knowledge.

Research on issues relating to access to water across all sectors, particularly access by the poorest sections of the community, also needs to be undertaken, as dry areas are likely to experience further water stress as a result of climate change.

5 Conclusion

Various approaches have been used to channel emergency aid in the form of seeds to drought-affected households and communities, with mixed degrees of success. The formal system that has largely involved commercial seed companies has been found in eastern Kenya to be slow, costly and sometimes non-beneficial to the very needy. Seed fairs that have involved an element of participation by the affected communities in planning and distribution of such aid has not only proved to be faster and cheaper but has also helped in building local capacities and institutions in seed production, storage and distribution. Above all, they have contributed towards promoting equity within the affected areas. It shows how aid given in times of difficulty may be used not only to provide relief from difficult situations but also to strengthen the local coping strategies that have evolved over time.

Use of informal systems of seed distribution contributes to conservation of crop diversity, as farmers are exposed to seeds from different sources (from their immediate areas and other agro-ecological zones as well). Seed fairs provide a market for traditional seed growers and hence there is an incentive to keep growing different crop varieties, some which were being forgotten. Participation of key government departments like KARI, KEPHIS, and national seed banks need to be promoted or strengthened, as they have a role not only in conserving indigenous varieties but also to introduce promote new drought-resistant and fast-maturing varieties.

Notes

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2. Eric Kisiangani is a Projects Manager, ITDG-EA.
3. This is the second lowest administrative level in Kenya.

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